Remarks/Argum nts

Claims 1 to 3, 5 to 9 and 12 are pending. Claims 1, 2, 5 and 12 have been amended. Claims 5 to 9 have withdrawn status.

Restriction to one of the following inventions has been required under 35 U.S.C. 121:

I. Claims 1 to 4 and 10 to 12, drawn to a multi-layer coating film-forming method, classified in class 204, subclass 484.

II. Claims 5 to 9, drawn to a multi-layer coating film forming method, classified in class 204, subclass 484.

The Office Action stated: that, during a telephone conference with Attorney V. Marsh on June 24, 2003, a provisional election was made without traverse to prosecute the invention of Group I, Claims 1 to 4 and 10 to 12; that affirmation of this election must be made by applicants in replying to this Office Action; Claims 5 to 9 have been withdrawn from further consideration by the Examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention. Applicants affirm their election of the invention of Group I. Applicants reserve the right to file a divisional and/or continued application drawn to the non-elected invention of Group II.

Claim 2 has been objected to because of the phrase "so as." The Office Action stated: that it needs to be deleted; and that appropriate correction is required. Claim 2 has been amended in such matter. This objection should be withdrawn.

For the purpose of overcoming the prior art rejections stated in the Office Action and making more clear the present invention, the applicants have amended claims as above and submit the attached Declaration, executed by one of the present inventors, Syuichi Ikenoue.

The presently claimed invention relates to a multi-layer coating film-forming method which comprises coating a cationic electrodeposition coating composition (A) containing a blocked polyisocyanate compound as a crosslinking agent and bismuth hydroxide to form a non-cured electrodeposition coating film, coating a water based intercoat coating composition (B_1) containing a hydroxyl group and carboxyl group-containing base resin, a blocked polyisocyanate crosslinking agent, a fine aluminum powder and a titanium oxide white pigment onto the non-cured electrodeposition coating film to form a non-cured intercoat coating film, followed by heat curing both coating films simultaneously, the fine aluminum powder being contained in the range of 0.1 to 30 parts by weight, and the titanium oxide white pigment being contained in the range of 1 to 200 parts by weight per 100 parts by weight of a total amount of the hydroxyl group and carboxyl group-containing base resin and the crosslinking agent respectively, as stated in amended Claim 1.

The use of the cationic electrodeposition coating composition containing bismuth hydroxide in the presently claimed invention can provide such advantages that the cationic electrodeposition coating film as a substrate coating film on heat curing the non-cured electrodeposition coating film and the non-cured intercoat coating-film simultaneously by the wet-on-wet coating method

may satisfactorily be cured, resulting in improving gloss and smoothness of the resulting multi-layer coating film as demonstrated in the Declaration as attached and Example 1 of the present application.

The use of the water based intercoat coating composition containing the fine aluminum powder in the presently claimed invention makes possible to provide a water based intercoat coating film showing a reduced luminous transmittance and good opacifying properties even at a thin coating film thickness as thin as 15 μm.

As the result, the presently claimed invention as claimed in amended Claim 1 can provide a multi-layer coating film-forming method capable of forming a multi-layer coating film showing good properties in all of gloss, smoothness, anti-chipping properties, weather resistance and interlayer adhesion properties as demonstrated in Example 1 of the present application and the above mentioned Declaration.

Claims 1 and 4 have been rejected under 35 U.S.C. 102(b) as being clearly by GB 2,334,222 A (a reference cited by applicants). Applicants traverse this rejection.

The Office Action stated: that GB'222's invention is directed to a method of forming a multi-layer coating film which comprise coating a cationic elctrodeposition coating composition containing a blocked polyisocyanate compound as a crosslinking agent (page 3, lines 12 to 20), coating a water based intercoat coating composition containing a hydroxyl group and carboxyl group-containing resin, a blocked polyisocyanate crosslinking agent (page 4, lines 85 to

35), a fine aluminum powder and titanium oxide pigment (see abstract) and heat curing both coating films simultaneously (page 3, lines 34 to 36); and to the recited white pigment of titanium oxide, titanium oxide of GB '222 inherently possesses the white pigment. Applicants traverse this rejection.

GB '222 discloses a multi-layer coating film-forming method as stated in the Office Action.

However, GB '222 does not disclose the use of a cationic electrodeposition coating composition containing bismuth hydroxide as claimed in amended Claim 1, to say nothing of particular advantages provided by the use of the bismuth hydroxide among bismuth-containing compounds as demonstrated in Example 1 of the present application and the above mentioned Declaration.

This rejection should be withdrawn.

Claim 3 has been rejected under 35 U.S.C. 103(a) as being unpatentable over GB '222. Applicants traverse this rejection.

The Office Action stated: that GB '222 further discloses in paragraph crossing pages 4 and 5 the average particle size of the fine aluminum powder; that the difference between GB '222 and the instant claim is the overlapping of the mean particle size of the fine aluminum powder; and that the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified GB '222's teachings because it has been held that a prima case of obviousness exists where claimed ranges overlap

or lie inside ranges disclosed by the prior art, *In re Wertheim* 191 USPQ 90: *In re Woodruff*, 16 USPA 1934. Applicants traverse this statement.

As stated in the Office Action, GB '222 further discloses in paragraph crossing pages 4 and 5 the average particle size of the fine aluminum powder.

However, GB '222 does not disclose the use of a cationic electrodeposition coating composition containing bismuth hydroxide as claimed in amended Claim 1 as above mentioned.

This rejection should be withdrawn.

Claim 2 has been rejected under 35 U.S.C. 103(a) as being unpatentable over GB '222 in view of Doebler et al. (U.S. Patent No. 5,389,406). Applicants traverse this rejection.

The Office Action stated: that the difference between GB '222 and the instant claim is the reciting controlling; that Doebler shows the controlling of curing temperature in a process for the production of multilayer coatings (see abstract); and that the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified GB '222's teachings as suggested by Doebler in a two-coat-one bake process because this would result in coatings with good intermediate layer bonding, improved subsequent processability, and good, defect-free surface structure. Applicants traverse this statement.

Doebler et al. discloses a process for producing multilayer coatings by the electrophoretic deposition of a first coating layer of a first aqueous coating medium on an electrically conducting substrate, the application of a second

coating layer based on a second aqueous coating medium, and jointly stoving the coating layers thus obtained, characterized in that a coating medium is used for the second coating layer which is based on one or more vehicles stabilized by ionic groups in the aqueous coating medium, which vehicles cross-link during stoving with the formation of urethane groups, wherein the coating medium is selected so that the maximum pigment/vehicle weight ratio of the first coating medium is 1:1, that the ratio of the pigment/vehicle weight ratio of the first coating medium to the pigment/vehicle weight ratio of the second coating medium has a value of up to 1.8, and that the minimum stoving temperature interval for the second coating layer is above that for the first coating layer or overlaps the latter so that the lower limit of the interval for the second coating layer is above the lower limit of the interval for the first coating layer.

In a two-coat-one bake process, the process of Doebler et al. is characterized in that the minimum stoving temperature interval for the second coating layer is above that for the first coating layer or overlaps the latter so that the lower limit of the interval for the second coating layer is above the lower.

However, GB '222 is silent about the above curing temperature controlling in Doebler et al.

On the other hand, Doebler et al. is silent about the intermediate paint (B) containing aluminum powder in GB '222.

Therefore, it would be technically unreasonable to combine GB '222 with Doebler et al.

Further, a curing method of Doebler et al. is quite different from that of Claim 2 of the present invention in that the former is characterized in that the minimum stoving temperature interval for the second coating layer is above that for the first coating layer or overlaps the latter so that the lower limit of the interval for the second coating layer is above the lower limit of the interval for the first coating layer, whereas the latter is characterized in that a crosslink-curing reaction of the non-cured electrodeposition coating film is controlled to take place earlier than a crosslink-curing reaction of the non-cured intercoat coating film.

Moreover, both GB '222 and Doebler et al. are silent about the use of a cationic electrodeposition coating composition containing bismuth hydroxide as claimed in amended Claim 1.

Therefore, any combination of GB '222 with Doebler et al. would not provide the presently claimed invention.

This rejection should be withdrawn.

Claims 10 to 12 have been rejected under 35 U.S.C. 103(a) as being unpatentable over GB '222 in view of Kerlin et al. (U.S. Patent No. 5,702,581). Applicants traverse this rejection.

The Office Action stated: that GB '022 further discloses in the last paragraph of page 2 that "in the process any usual undercoat paint can be used"; that the difference between GB '222 and the instant claims is the use of a lead-free cationic electrodeposition coating composition containing a bismuth-containing compound; that Kerlin shows the use of such a coating composition (see abstract); and that the subject matter as a whole would have been obvious

to one of ordinary skill in the art at the time the invention was made to have modified GB '222's teachings as suggested by Kerlin because the selection of any of known equivalent undercoat paint would be within the level of ordinary skill in the art. Applicants traverse this statement.

Kerlin et al. disclose a cationic electrodeposition coating composition containing bismuth in the form of an organic bismuth complex and/or a bismuth salt of an organic carboxylic acid (see abstract, column 4, lines 22 to 41), for example, a bismuth compound of bismuth lactate, bismuth dimethylolpropionate and the like.

Kerlin et al. also disclose the use of bismuth oxide (Bi_2O_3) in the production of organic bismuth salts such as bismuth lactate and bismuth dimethylolpropionate as shown in Example 1, column 6.

However, Kerlin et al. do not disclose the use of a cationic electrodeposition coating composition containing bismuth hydroxide as in amended Claim 1, to say nothing of resulting particular advantages as demonstrated in Example 1 of the present application, particularly in the attached Declaration as above mentioned.

This rejection should be withdrawn.

Claims 2 and 10 to 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB '222 in view of Tomizaki et al. (U.S. Patent No. 6,375,820). Applicants traverse this statement.

The Office Action stated: that GB '022 further discloses in the last paragraph of page 2 that "in the process any usual undercoat paint can be used";

that the difference between GB '222 and the above claims are the controlling of the curing temperature and the use of a lead-free cationic electrodeposition coating composition containing a bismuth-containing compound; that Tomizaki et al. shows both the limitations in a process for forming multilayer coating film (col. 6, lines 17 to 41 and col. 4, line 53, through col. 5, line 62); and that the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified GB '222's teachings as suggested by Tomizaki et al. because the selection of any of known equivalent cationic electrodeposition coating composition would be within the level of ordinary skill in the art. Applicants traverse this statement.

Tomizaki et al. discloses the limitation of Claim 2 in col. 6, lines 17 to 41, as stated in the Office Action.

Tomizaki et al. also discloses many bismuth-containing compounds including bismuth hydroxide to be contained in the cationic electrodeposition coating composition in col. 4, line 53, through col. 5, line 62, as stated in the Office Action.

Tomizaki et al. further discloses a cationic electrodeposition paint (A-a) using basic lead silicate in col. 9, lines 27 to 64, a cationic electrodeposition paint (A-b) using bismuth hydroxide in place of the basic lead silicate in the cationic electrodeposition paint (A-a) in col. 9, line 65 to col. 10, line 4, and a cationic electrodeposition paint (A-c) using bismuth oxide in place of the basic lead silicate in the cationic electrodeposition paint (A-a) in col. 10, lines 5 to 23.

Tomizaki et al. also discloses that the use of the paint (A-b) using bismuth hydroxide provides the same results as the results provided by the use of the paint (A-a) using basic lead silicate and the paint (A-c) using bismuth oxide as demonstrated in col. 11, Table 1.

Tomizaki et al. does not demonstrate that the use of the cationic electrodeposition coating composition containing bismuth hydroxide as in amended Claim 1 is particularly advantageous among many other bismuth-containing compounds disclosed in Tomizaki et al.

It would have been difficult for one of ordinary skill in the art at the time the invention was made to expect particular advantages provided by use of a cationic electrodeposition coating composition containing bismuth hydroxide as claimed in amended Claim 1 from the above teachings of Tomizaki et al.

On the other hand, Tomizaki et al. do not disclose a water based intermediate coat paint (B) containing a fine aluminum powder as in amended Claim 1.

In addition, it would have been more difficult for one of ordinary skill in the art at the time the invention was made to expect above mentioned particular advantages provided by a combined use of a cationic electrodeposition coating composition containing bismuth hydroxide with a water based intercoat coating composition containing a fine aluminum powder as demonstrated in the above Declaration from the above teachings of Tomizaki et al., particularly the use of the water based intermediate coat paint (B) not containing fine aluminum powder.

In connection therewith, a combined use of a cationic electrodeposition coating composition not containing bismuth hydroxide with a water based intercoat coating composition not containing a fine aluminum powder may result a multi-layer coating film showing very poor weather resistance and seriously poor interlayer adhesion properties as demonstrated in Comparative Example 1 of the present application.

This rejections should be withdrawn.

By way of conclusion, as the result of a combined use of the cationic electrodeposition coating composition containing bismuth hydroxide with the water based intercoat coating composition containing the fine aluminum powder, the presently claimed invention as claimed in amended Claim 1 can provide a multi-layer coating film-forming method capable of forming a multi-layer coating film showing good properties in all of gloss, smoothness, anti-chipping properties, weather resistance and interlayer adhesion properties as demonstrated in Example 1 of the present application and the above mentioned Declaration.

Reconsideration, reexamination and allowance of the claims are requested.

Respectfully submitted,

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Date

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